

AUG 6 1928

Medical Lib.

THE RHODE ISLAND MEDICAL JOURNAL



Owned and Published by the Rhode Island Medical Society. Issued Monthly

VOLUME IX { Whole No. 203
No. 8.

PROVIDENCE, R. I., AUGUST, 1926

PER YEAR \$2.00
SINGLE COPY 25 CENTS

CONTENTS

ORIGINAL ARTICLES

- The Cerebro-Spinal Fluid—its History, Pathways and Clinical Values. John E. Donley, M.D. . . . 119
The Treatment of Neurosyphilis. William Newton Hughes, A.M. M.D. . . . 126

Contents continued on page IV advertising section

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT PROVIDENCE, R. I., UNDER ACT OF MARCH 3, 1879

Do your "cruise shopping" early!

THE way to be sure that on next winter's cruise you will have the accommodations you want at the price you want to pay, is to arrange now for your trip. A small deposit will hold any desired accommodation for any of the sailing dates listed below.

The Man Who's Been There will gladly help you plan your trip.

EXTENDED TOURS AND CRUISES

ROUND THE WORLD 1926-1927				MEDITERRANEAN CRUISE			
Date	Ship	Company	Price	Date	Ship	Company	Price
Oct. 14,	Carinthia	R. & W.	\$2250 up	Jan. 6,	Adriatic	White Star	\$750 up
Dec. 2,	Emp. of			Jan. 15,	Lapland	Red Star	\$750 up
	Scotland	Can. Pac.	\$1800 up	Jan. 22,	Homerio	Thos. Cook	\$1000 up
Dec. 14,	Belgenland	Am. Exp.	\$2000 up	Jan. 26,	Seythia	Frank	\$950 up
Jan. 6,	Resolute	United Am.	\$2000 up	Jan. 29,	Transylvania	F. Clark	\$600 up
Jan. 12,	Franconia	Thos. Cook	\$2250 up	Feb. 3,	Rotterdam	Holl. Am.	\$930 up
Jan. 19,	California	F. Clark	\$1250 up	Feb. 9,	Samaria	R. & W.	\$1000 up
SECOND GREAT AFRICAN CRUISE				Feb. 12,	Emp. of France	Can. Pac.	\$900 up
Jan. 20,	Asturias	Royal Mail	\$1625 up	Feb. 24,	Adriatic	White Star	\$750 up
				Feb. 26,	Orea	Royal Mail	\$875 up
				Mar. 5,	Lapland	Red Star	\$750 up

Dollar Line twice monthly, Around the World, \$1250 up.
United Fruit, leaving weekly year round, 2 to 4 week cruises.
West Indies Cruises, 15 to 30 days, leaving weekly, January—April.

Aylsworth Travel Service

Albion with RHODE ISLAND HOSPITAL TRUST COMPANY

16 Weybosset St. PROVIDENCE, R. I.
RHODE ISLAND TRAVEL SERVICE





Infant Feeding Is a Science

"Science rests not upon faith but upon verification"

MEAD'S DEXTRI-MALTOSE with either fresh, raw, cow's milk or *Mead's Powdered Whole Milk*, and water, makes the scientific formula possible.

The combination of

MEAD'S DEXTRI-MALTOSE,
milk, and water for the artificial feeding of infants has stood the test of time.

For Your Convenience

Pamphlet on Dextri-Maltose
Celluloid Feeding Calculator.

Samples sent cheerfully on request

The Mead Policy

Mead's Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians

MEAD JOHNSON & COMPANY, Evansville, Indiana, U. S. A.
Manufacturers of Infant Diet Materials Exclusively

THE RHODE ISLAND MEDICAL JOURNAL

The Official Organ of the Rhode Island Medical Society
Issued Monthly under the direction of the Publication Committee

VOLUME IX { Whole No. 203
NUMBER 8 }

PROVIDENCE, R. I., AUGUST, 1926

PER YEAR \$2.00
SINGLE COPY 25 CENTS

ORIGINAL ARTICLES

THE CEREBRO-SPINAL FLUID,—ITS HISTORY, PATHWAYS AND CLINICAL VALUES.*

By JOHN E. DONLEY, M.D.,
PROVIDENCE, R. I.

The progress of research in three departments of study, anatomy, physiology and bio-chemistry, has converted modern medicine from a craft of mere tradition and sagacity to an applied science of analysis and law; from a descriptive code of surface phenomena to the discovery of far deeper affinities; from a set of rules and axioms of quality to measurements of quantity. As the result of these questionings three fluids of the body, the blood, the urine and, latterly, the cerebro-spinal fluid, have disclosed a few at least of their mysteries, so that by a knowledge of their permutations we can ameliorate some of our clinical perplexities. Of one of these, the cerebro-spinal fluid, I purpose to attempt some compendious story; describing, first, one or two crucial events in the history of its discovery; then saying a brief word about its pathways in the central nervous system; and finally indicating, rather than describing, some of the more important clinical values of its study. And, as we observe the eager efforts of our fathers to understand the fabric of the brain and its working, we shall, I doubt not, pay them due gratitude for having sailed uncharted seas that we may enjoy our present heritage. Furthermore, it will appear how, in the laborious growth of medicine, the busy hand and the observant eye, by their insistent curiosities, have compelled the mind from high imaginings to the study of concrete realities.

Among those brilliant children, the Ionian Greeks, we discern the beginnings of neurological speculation. While Pythagoras, pre-eminent amongst the early philosophers who exercised a

lasting influence on medicine, clearly differentiated mental affections, it was a young contemporary of his, Alkmaion of Crotona (500 B. C.) who first established that the brain is the organ of intellect and the seat of sensation and movement. For Hippocrates (460-377 B. C.) the brain is the seat of intelligence; by it we think, understand, see and hear, know what is base and honorable, good and evil, pleasant and unpleasant; it is the chief organ in man, the messenger and instrument of the intellect. From the brain itself humor flowed to the nose, and if free and unobstructed purified the brain, but if restrained and obstructed, became acrid and corrosive, thus producing much disturbance of the system and derangement of the mind. The structure of the brain was imperfectly known to the Hippocratic physicians, for it is merely described as double, and divided in the center by membranes, of which the upper is hard and the lower soft and intimately applied to the brain. The membranes of the spinal cord are described but not the cord itself. Plato in the *Phaedo* admits the hegemony of the brain as being the seat of intelligence and perception, but Aristotle, no great admirer of the brain, declared it to be compounded of earth and water; hence, he said, it was a cold, dry and bloodless organ, the function of which was to cool the heat and fervor of the heart, which for him was the seat of life, perception and sensation.

Thus among the earliest Greeks we discern only the most general and inchoate ideas concerning cerebral structure and function, ideas which were possible to men of brilliant imagination and speculative power but which as yet, in the absence of anatomical investigation, were lacking in differentiation, variety and precision. Although the Greeks, in their ardor to generalize, could not always wait to read what Plato calls the "long and difficult language of facts," yet in the third pre-Christian century was made at Alexandria, a splendid beginning, too soon alas, eclipsed, of cerebral anatomy and physiology by Herophilus, Erasistratus and their successors. So much had this Alexandrian research advanced the knowledge of

*Read before the Rhode Island Medical Society, March 4, 1926.

neurology that in the reign of the Emperor Trajan (100 A. D.) Rufus of Ephesus could summarize contemporary knowledge of cerebral anatomy thus: In the interior of the skull is the brain, larger in man with respect of his bodily size than in other animals. There are two meninges, one thick and strong, attached to the bones of the skull; the other thin and spread out over the brain. These two envelopes are membranous and fibrous and possess a certain sensibility. The upper surface of the brain is pulpy and viscous and its convolutions and fissures have been likened to varicosities. The brain has a gray appearance. Its inferior and posterior surface is called the base and the prolongation which arises from the base is the parencephalon or cerebellum. The cavities within the brain are known as ventricles and the membrane which lines them is called the choroid. From the brain spring the sensitive and motor nerves through which we feel and produce voluntary motion and by which are accomplished all the activities of the body. From the brain arises the spinal cord which emerges from the occipital opening in the skull and passes down the spinal column crossing all the vertebrae. The spinal cord is not a special substance but rather a continuation of the brain. As from the brain, so from the spinal cord, are given off nerves some of which are motor while others subserve sensation. From the brain proceed nerves to the organs of sense such as the ears and the nose. One of these nerves arises from the front of the base of the brain and having divided into two branches sends one to each of the eyes.

As the torch of Greek learning in philosophy, literature, politics and natural science passed from Ionia through Athens and Alexandria to Rome, so likewise did the knowledge of Greek medicine, fed from these earlier springs, find its culmination and its term in Galen of Pergamos, (131-200 A. D.) physician to Marcus Aurelius and the last representative of the original Hellenic tradition in medicine. This great physician who founded experimental physiology and, multiplying the gifts of Alexandria to anatomy, largely increased its riches, occupies a pre-eminent position in our story of the cerebro-spinal fluid, for he it was who for more than fifteen centuries promulgated the dogmas of cerebral anatomy and physiology; nor is his in-

fluence dead even now, for in the pale ghosts of "morbid entities" he continues still to plague the thoughts of some modern physicians. In the ventricles of the brain he enthroned those ancient animal spirits which, like an Oriental despot, reigned there until their tyranny, attacked in the eighteenth century by Cotugno, was in the nineteenth ended forever by Magendie. Indeed one may say that the story of the cerebro-spinal fluid is just the account of men's attempts to take spirits out of the ventricles and to put fluid into them. What then was Galen's teaching concerning the content and functions of the cerebral ventricles?

We shall perhaps, more easily apprehend his views if we begin in the abdomen and work upwards to the brain. According to Galen the first digestion of food occurs in the stomach which is assisted in its work by the warmth transmitted to it by the four lobes of the liver. From the stomach the food passes into the small intestine whence as chyle it is conveyed by the portal vein to the liver which, for the generations of physicians before Harvey, was the great organ of blood formation. In the liver the crude chyle is subjected to the influence of the *spiritus naturalis* which converts it into nutritive blood. One portion of this blood ebbs and flows from the liver through special veins which convey it to the tissues, there to serve for nourishment. Another portion leaves the liver and coursing through the hepatic veins and ascending vena cava reaches the right side of the heart. And here another marvelous thing occurs, which is as follows: One moiety of the blood in the right heart enters the pulmonary artery and passes to the lungs which it serves to nourish; the other portion enters the left ventricle, drop by drop, through the invisible pores which Galen believed to exist in the inter-ventricular septum. During its brief stay in the left ventricle the blood again undergoes a process of perfecting which is accomplished by the *pneuma*, that subtle, aetherial principle which enters the body with air during respiration and having during diastole, reached the left ventricle by way of the pulmonary veins, permeates the blood, endowing it with vital spirits, which with the blood are distributed by the arteries to all parts of the body. Now some of this blood charged with vital spirits, is conveyed by the carotid arteries to the base of the brain, and here it meets in the choroidal plexuses of the lateral ven-

trices, the pneuma which had previously entered the anterior part of the ventricles through the numerous openings in the ethmoid bone. From this conjugation of the pneuma from the air and the vital spirits contained in the choroidal plexus blood are distilled the animal spirits which, filling the ventricles and permeating the substance of the brain, serve as the organ of the soul and the principle of sensation and of motion. These extraordinary animal spirits formed in the lateral ventricles, pass through the openings connecting the lateral with the third ventricle and thence by way of the aqueduct of Sylvius into the fourth ventricle which they leave to enter the spinal cord and the peripheral nerves. The brain possesses a movement synchronous with respiration which serves to drive the animal spirits out of the ventricles into the nerves. As for the impurities of the brain, the grosser are discharged through the ethmoids into the nose and mouth while the finer particles escape through the cranial sutures. Such then in outline was the cerebral physiology which, by his only too skilful dialectic, Galen riveted upon physicians and philosophers for fifteen centuries. And even today when we speak of high spirits and low spirits and animal spirits we pay our meed of tribute to the dead physiology of Galen.

Although the subarachnoid fluid was mentioned by Valsalva in the early eighteenth century, it was in 1764 that Dominico Cotugno, a young physician of Naples, published his dissertation entitled *De Ischiade Nervosa* or *The Nervous Sciatica*. In this little book he demonstrated for the first time that not any palpable spirits occupied the cerebral ventricles and the spinal subarachnoid spaces, but rather a watery medium; and so by Cotugno was opened the way for Majendie who gave to the cerebro-spinal fluid its name and wrote the first great modern treatise on the subject.

I am pleased to be able to read to you Cotugno's original account of his discovery, for only after much searching was I able to obtain a copy of this important essay.

How, then did this young man Cotugno come to discover that for fifteen centuries men were mistaken in their beliefs about the presence of animal spirits in the cerebral ventricles? As physician to the Great Neapolitan Hospital for Incurables, Cotugno was interested in the study of sciatica, for

no doubt he was constantly meeting with patients who were suffering the tortures inflicted by this painful malady. His view of the pathology of sciatica was this—that it was caused by a too abundant or a too acrid fluid flowing from the spine into the sheath of the sciatic nerve. Cotugno was trying to find out the pathology of sciatica as a preliminary to its rational treatment when, by his dissections, he showed that the ventricles and the subarachnoid spaces contained a watery fluid. And this is what he says about it: At first therefore it is necessary to premise that the hollow of the spine which from the great foramen of the occiput reaches to the extremity of the os sacrum, through which the spinal marrow descends, is larger in men than in other animals; for it is so large that it not only affords a convenient passage for the marrow as it does in other animals, but although the marrow, in proportion to the brain, which is larger in men, is also fuller than in other animals, the capacity of the spine far exceeds the size of the marrow; so that around the marrow descending in the spine, there is a considerable space remaining. This space is not entirely devoid of matter, for through it descends the dura mater which being formed into a tube, from the great foramen of the occiput, incloses the spinal marrow like a sheath. This tube of the dura mater is not so large as to touch the surrounding enclosure of the spine on all sides, nor so narrow as to embrace the included marrow closely; but it is somewhat distant from the hollow of the spine, chiefly backwards towards the seat of the spinal apophyses, and is separated from the circumference of the enclosed marrow by a considerable space. These two spaces, when a man is in health, are not empty, but each is filled with a matter peculiar to itself; for all that space which is between the dura mater and the enclosure of the hollow of the spine is always filled with a cellular kind of substance, replete with a soft and fluid kind of fat; in the place of this, in consumptive persons, there is a mucid vapor, and a true mucus in dropsical persons and in foetuses suffocated in difficult labors, a sanguineous vapor. But also all that space which is between the sheath of the dura mater and the spinal marrow, is always found to be filled, not as some eminent men imagine, (because the fact is as yet immersed in obscurity) by the marrow itself, which is more full in living than in dead subjects,

nor by a thick vapor, but with water like that which the pericardium contains about the heart, or such as fills the hollows of the ventricles of the brain, the labyrinth of the ear, or the other cavities of the body which are impervious to the air.

This water which fills the tube of the dura mater even to the os sacrum, does not only enclose the spinal marrow but even abounds in the cavity of the skull and fills all the spaces which are between the brain and the surface of the dura mater. Some of these spaces are always to be met with about the base of the brain; and it is not uncommon to find a considerable space between the surface itself of the brain and the surrounding dura mater. This is principally to be found in consumptive persons and old men . . . so that it seems we may lay it down as a certain truth that the space which is filled with water around the spinal marrow in men increases with age, for this space which is not found in a foetus, where the marrow is embraced by the tube of the dura mater, especially the neck, increases with age and grows considerably larger.

The reason that anatomists have never yet observed this collection of water about the brain and in the spine is owing to the common preposterous method of dissecting, for when they are about to examine the brain they commonly cut off the head from the neck, and by this means the tube of the dura mater, which descends along the spine in the neck, being cut through, all the water that is collected about the brain and the spinal marrow flows out and is foolishly lost; so that when the skull is opened all the spaces between the brain and the dura mater which were before filled with water are now found empty and deceive the anatomists with the appearance of empty cavities which perhaps some volatile vapor filled. Here then nothing at all is found either in the cavities at the base of the skull or in the chief sinuses of the dura mater to prove that they were occupied by some fluid. So that by this irrational method of dissecting all the fluid collected around the marrow and the brain being lost, air enters in and supplies its place.

In order therefore, that such a collected fluid may be plainly observed about the brain and spinal marrow we must carefully make the following experiments. Let the head of the undivided body be put into an erect position; the integuments being dissected and the bones bared, proceed to

separate the bony vault of the skull by an horizontal section. But in beginning thus great care must be taken in cutting the bone or in separating it, not to perforate the adjoining dura mater. If this rule is observed, when the bone is taken off, if it be the head of the body of an old man or consumptive person, we shall find, wherever the dura is pricked, that water will flow out; if the patient be not old or consumptive the dura will appear to be exactly filled with the brain. But after this, let the dura mater be dissected and the brain bared and then water will plainly appear under the arachnoid. After this lift up gently the anterior lobes of the brain and you will see each of the cribiform cells of the ethmoid abounding in water; and upon raising the rest of the brain you will find, at the conjunction of the optic nerves and the sides of the oval protuberance, all those parts which are empty in bodies with severed heads, full of water. This water may fill the sheath of the fifth pair and the whole auditory meatus.

All the space that is around the trunk of the medulla oblongata is filled with water, and if, after the trunk is cut through, the cerebrum and cerebellum be taken away and the body put in an erect position, the tube of the dura mater will be found to be exactly full of water all around the spinal marrow. After this, if you cut through any of the vertebrae of the loins and the lower part of the tube of the dura mater where it embraces the cauda equina you will find a limpid stream flow out and the water which was before observed around the spinal marrow, will gradually descend till it is all emptied by the aperture at the bottom. If you open the vertebrae of the loins before the head is touched and cut the enclosed tube of dura mater, a great quantity of water will burst out, and after all this spontaneous flux of water is spent, if you will lift up the head and shake it towards the aperture, a more plentiful stream will burst out, as if a new fountain was unlocked. In these experiments which I made on the bodies of near twenty adults, and which I repeated at different times, I could draw off freely from the hollow of the spine, four and even sometimes five ounces of water. I commonly found it very clear in such subjects, although it sometimes inclined a little to a yellow color. But in foetuses strangled in difficult labor, little as it was, I observed it to be always red and opaque.

Magendie published his classical researches at Paris in 1842. Let me quote a short extract from his writings as illustrating the spirit with which he set about his work. "This infant," he remarks, "has water on the brain, as the layman puts it. This infant has hydrocephalus, gravely pronounces the physician—repeating literally in Greek what the layman, ignorant of Greek described in his own tongue. But what is this water and whence does it come? These are the questions with which the physician ought to occupy himself." And so well did Magendie occupy himself with them that on only two points have his opinions failed to be corroborated by later researches: first, he believed that the cerebro-spinal fluid was secreted by the pia mater, and second, that although there was no open communication between the lateral ventricle and the basal cistern, he was of the opinion that the cerebro-spinal fluid could diffuse from one into the other. As every one knows he inscribed his name on the foramen of Magendie which is normally from 3 to 5 mm. in diameter.

Briefly, the anatomical relationships of the cerebro-spinal fluid are as follows: It is formed in the lateral, the third and fourth ventricles by the choroid plexuses which lie in these situations. These are highly vascular fringes of invaginated pia mater covered over on their free, ventricular surface by a continuous layer of cubical cells which are continuous with the ependymal covering of the ventricular walls. From the posterior part of the third ventricle, where they are in contact, the two halves of the plexus run forward on either side of the middle line to the foramina of Munro, through which they pass and then turn backwards, downwards and forwards round the inner wall of the inferior horn of the lateral ventricle. Neither the anterior nor the posterior horn contains any plexus. The choroid plexus of these ventricles is supplied by the anterior choroidal, a branch of the main trunk of the internal carotid, and by the posterior choroidal, a branch of the posterior cerebral. The arterial supply to the plexus is thus assured by its derivation from both internal carotid and vertebral arteries. The small choroid plexus of the fourth ventricle is essentially similar in structure to those of the lateral and third ventricles. There is absolutely no communication between the ventricles and the sub-arachnoid spaces except by way of the foramina of Munro into the third ven-

tricle, thence through the aqueduct of Sylvius which tunnels the midbrain into the fourth ventricle, from which the fluid escapes through the central foramen of Magendie at the tip of the calamus scriptorius and the two foramina of Luschka which pass out from the lateral recesses of the ventricle. Having travelled along this route and finding its way into the sub-arachnoid spaces what becomes of the fluid? Where does it go and what are the channels for its absorption? The answers to these questions form a very interesting chapter in recent physiology which has been written in large part by American physiologists. Their main conclusions are as follows:—

"The cerebro-spinal fluid is not stagnant, nor like the tides, does it ebb and flow; it actually circulates and forms what Harvey Cushing has recently called the third circulation. As we have seen, the sub-arachnoid space is a closed sack communicating with the ventricles. In most text-books of physiology, as Cushing says, one gathers the idea that the fluid ebbs and flows—a truly Galenic conception—although long ago Key and Retzius gave a hint of the actual state of affairs by suggesting that the granulations of Pacchioni represent portals through which the fluid passes from the arachnoidea into the large meningeal sinuses. This unverified hint was put to experimental proof by Dr. Weed who carried out a long continued sub-arachnoid injection in the living animal, of potassium ferrocyanide and iron ammonium citrate in isotonic solution, with the subsequent immediate fixation of the tissues in an acid medium. This procedure, which served to precipitate Prussian blue granules out of the foreign salts introduced in solution, made it possible to utilize histological methods to identify the situation of the granules in the tissues and tissue spaces. And with what result? Well, instead of a relatively few Pacchionian bodies, it was found that the fluid had passed through the mesothelial cells which cap the arachnoid villi that project in large numbers through the dura into its many venous sinuses, large and small, in all parts of the cranial chamber. With this substitution of countless microscopic arachnoidal villi for the occasional Pacchionian granulation as the essential portals of escape for the fluid, our conception of the process of absorption was greatly clarified: and Weed's subsequent demonstration of the ease and certainty with

which a chronic hydrocephalus of high grade may be experimentally produced by the simple injection of lamp-black into the sub-arachnoid channels, which serves to occlude the arachnoid villi, would seem to make it most probable that damage or imperfect development of these structures is the most common cause of otherwise unexplained cases of early or congenital hydrocephalus. From these and other studies it is pretty definitely proved that the fluid circulates from its origin in the choroid plexuses through the ventricles into the cisterna magna and having reached this pond that its further course is forward along the basal cisterns and upward over the cerebral cortex to its points of absorption—these myriad microscopic villi which empty it into the dural sinuses. Owing to their relatively low pressures the venous blood and cerebro-spinal fluid are driven out of the cranial chamber by each arterial pulse so that some of the fluid passes into the spinal sub-arachnoid space which is very easily distensible. In man we meet the curious arrangement of a long vertical tube of fluid, from which the only, or at any rate the main outflow is at the upper end. The interchange and replacement of this fluid is aided by the presence of a plexus of veins in the space between the dura mater and the laminae arches of the lower dorsal and lumbar regions. These veins, when they become engorged during expiration, displace the fluid in the lumbar cul-de-sac upwards towards the cervical region of the cord. In spite of these pulsations, however, there is a tendency for blood corpuscles and inflammatory cells to become sedimented in the lower end of the dural sac, whence they may be withdrawn by lumbar puncture. With this sketchy outline of the pathways of the cerebro-spinal fluid in our minds we may proceed to ask in what ways the examination of this fluid may assist us in our clinical problems.

Just as we know the normal cellular and chemical content of blood and urine, so in the last few years we have come into possession of a similar knowledge as to the cerebro-spinal fluid. By lumbar, cistern and occasionally even ventricular puncture, much information of value for diagnosis and for treatment may be obtained, so that what was for our forefathers a matter of mere sagacious inference has become for us an object of scientific demonstration. Obviously few of us can

carry in mind the enormous mass of detail which the busy labors of many workers have amassed for us; but as a rough aid to memory one may group pathological processes in the central nervous system into the following categories—vascular, inflammatory, toxic, neoplastic and degenerative. Most organic disturbances of the nervous system can be placed under the rubric of one or another of these and in all of them the investigation of the cerebro-spinal fluid may be of no little value.

First as to vascular disorders. Cerebral hemorrhage or thrombosis often occurs without producing any other change in the fluid than a rise in pressure. It is usually found however that the fluid shows some alterations from the normal which are associated more with the morbid changes in the blood vessels than with the occurrence of the stroke. The commonest of these is an excess of protein, which is frequently found in case of cerebral vascular disease associated with high blood pressure. When this is due to syphilis the excess of protein may be, but what is of some importance, is not always accompanied by an increased cell count and a positive W. R. In some cases of cerebral hemorrhage blood penetrates into the ventricles in larger or smaller amounts: the fluid then becomes evenly mixed with blood cells and when these are removed by spinning, the clear overlying fluid is tinged with yellow. The presence of large quantities of evenly mixed blood in the fluid soon after a hemiplegic stroke is strong evidence in favor of cerebral hemorrhage. But a small quantity of blood admixture associated with yellow discoloration does not prove that we are in the presence of cerebral hemorrhage. For it must be remembered that every case of cerebral thrombosis is associated with some hemorrhage from capillaries, and when this occurs in the neighborhood of the large cistern at the base of the brain some of the red cells can easily find access to the spinal sub-arachnoid space. Thus after thrombosis of the middle cerebral artery in the region of the Sylvian fissure it is common to find slight blood contamination and yellow coloration of the clear fluid. In extradural and subdural hemorrhage which is almost always traumatic in origin there is as a rule little or no alteration in the fluid—at most it may show a slight yellowish tint.

In subarachnoid hemorrhage however the evidence afforded by the cerebro-spinal fluid may be crucial. Such hemorrhage may be due to trauma as in fracture of the skull, but it may be spontaneous and occur in young, healthy subjects as the result of a relatively slight strain or effort, or again in the course of a febrile disease. In such cases the fluid examination may be the readiest and most certain, indeed at times the only way of distinguishing the condition from acute meningitis or encephalitis. When one considers how intolerant is the subarachnoid space toward red blood cells, and furthermore how Nature by placing therein the wandering meningocytes, has provided from birth a sort of police patrol for their removal, it must be evident to all of us that hemorrhagic effusions in the new-born ought to be treated by lumbar puncture in spite of the technical difficulties attendant upon entering such a diminutive lumbar sack.

In all types of meningitis lumbar puncture is so much a matter of routine that I need only mention it. There are however one or two points of differential diagnostic value which it may be worth while to recall. We all know how difficult is the distinction, especially in their early stages, between tuberculous meningitis and some cases of encephalitis lethargica. Here the fluid may be of considerable help for whereas in both conditions there is usually some increase in small lymphocytes, if we study the protein, glucose and chlorides, it will usually appear that in tuberculous meningitis glucose and chlorides are constantly reduced below the normal and protein is increased, while in encephalitis lethargica protein and chlorides are within normal limits while the glucose is usually rather above the normal. If tubercle bacilli are found in the fluid, the diagnosis is, of course, settled, but one is not always so fortunate as this and in these puzzling cases it is that the estimation of protein, chlorides and glucose is of so much value.

In meningococcal meningitis it is a mistake to expect cloudy fluid at the beginning of the disease when the administration of serum may do the most good. The early fluid may present none of the characteristic appearances of meningitis and a most careful examination of it may be necessary to establish the diagnosis of meningitis. At this stage the fluid may be clear and colorless or may present merely a slight olive tint. A heavily pur-

ulent fluid is the exception at this stage of the disease, but within a few hours of the first intrathecal injection the fluid becomes distinctly more purulent. The cells are enormously increased, 1000 to 2000 or more per centimeter. Almost all of them are of the polymorphonuclear type in the early stages while lymphocytes and eosinophil leucocytes are very scanty. It is well to remember that a clear cerebro-spinal fluid may contain a large number of polymorphonuclear cells and hence it is not true, as one sometimes reads in text-books, that a turbid fluid is the most suggestive evidence of meningococcal meningitis. If there is a reasonable suspicion that meningococcal meningitis is present, serum ought to be given even when the fluid is perfectly clear. As in tuberculous meningitis, protein is increased, while chlorides and glucose are diminished, but even when the diplococcus cannot be found the leucocyte increase being polymorphonuclear rather than small mononuclear as in tuberculous meningitis, is of considerable value in contributing to the correct diagnosis. One word as to those sub-acute and chronic cases which for years have been called "posterior basic meningitis." In these conditions the diplococcus is hard to find and it may be necessary to await the results of culture on blood media before the organism can be demonstrated. Streptococcal meningitis, arising for example from infection of the middle ear or mastoid cells, or again from some of the paranasal sinuses may give a fluid substantially identical with that of meningococcal meningitis, with one exception—in the meningococcal type the organism is usually to be found in some at least of the cells and is Gram-negative, while in streptococcal meningitis it is Gram-positive and can be seen lying between rather than within the cells.

I think it may be said with truth that every patient who begins to complain of spastic weakness in one or both legs should be regarded as the subject of spinal tumor until such possibility has been definitely disproved. And while spinal tumors are less frequent than those of the brain, there are certainly some neoplasms which for months and even years remain unrecognized because first, an erroneous idea of their symptomatology is widely prevalent, and secondly, modern technical methods are not used as often as they might be in the diagnosis of them. Medical tradition has long taught us that spinal tumors disclose

their existence by a sequence of symptoms beginning with neuralgic root pains which are then followed by motor weakness and concomitant sensory disturbances. Now while this is generally true it is by no means universally so, for many tumors for a long time, and indeed at no time produce any root pain symptoms. They may run a long course and cause complete paraplegia without any very obvious pain, for the reason that their anatomical site may be such as to produce no root pressure. Hence it is that many of them are unrecognized as such until irreparable damage has been done to the cord.

Even though we know from history and laboratory tests that the patient has been infected with syphilis, even though we may discover an osteoarthritic spine, even though we are aware that multiple sclerosis may remain for long confined to the lumbar cord, even though the patient may have flat feet, or sacro-iliac pathology, even though we soothe our minds with the hypothesis of some kind of transverse myelitis, nevertheless we should always remember that a spinal tumor may be the real cause of the patient's difficulties. And if it is present it is highly probable that careful study of the cellular, chemical and pressure relations of the fluid will help us to some provisional conclusions.

If tumor is present it is reasonable to assume that mechanically it will cause some grade of sub-arachnoid block which, by constricting the spinal sub-arachnoid pathway, will interfere with normal flow of fluid. Now there are three ways of determining the existence of this block. In 1909 Blanchetiere and Lejonne and in 1910 Nonne showed that in cases of spinal tumor there is increase of protein without any corresponding increase of cells in the spinal fluid. In 1919 Dr. Ayer of Boston introduced the method of tapping both the cisterna magna and the lumbar sac, and comparing the manometric pressure and the chemical composition of the fluid in the two situations. This method formed a really brilliant advance on the examination of the lumbar fluid alone, as by its use it is possible to state with some certainty whether or not there is blocking of the sub-arachnoid space, and to exclude such causes of increased protein in the lumbar fluid as polyneuritis and tumors of the cauda equina. In 1923 Sicard of Paris advanced the subject a stage further by injecting lipidol into the cisterna magna, and deter-

mining by the X-ray not only the presence and completeness of the block, but also its situation in relation to the vertebrae. In a case of paraplegia, then, of doubtful origin the clinician will have recourse first to the examination of the lumbar fluid alone and if this suggests the diagnosis of a spinal compression, he may then employ or have employed for him, the methods of Ayer and Sicard. If however the fluid is perfectly normal, or shows evidence only of inflammatory disease of the meninges, the diagnosis of spinal compression may be discarded, for the moment at least.

From these altogether too sketchy remarks which touch merely the fringe of a great subject, I think one may apprehend that to the blood and urine we may now add the cerebro-spinal fluid, which, because it bathes the brain and cord and their coverings, is able to report to us the site, kind and degree of pathological happenings in these structures.

I have been urging the employment of lumbar puncture. May I say one last word by way of caution in its use. No more than ureteral catheterization should it be used as a matter of routine. When one has seen, as some of us have, a patient collapse after what appeared to be a simple puncture, he is not likely to advise the procedure without the justification of reasonable need. When there is an increased intracranial pressure puncture should be done with the greatest care, especially in the presence of suspected tumor; and if the tumor is thought to occupy the posterior fossa of the skull no diagnostic curiosity should lead a physician to tap the lumbar sack nor even to think of cistern puncture. Lastly, when confronted by a condition of septicaemia tapping is inadvisable for the result of our efforts may be the setting up of a meningitis which otherwise might not have occurred.

*THE TREATMENT OF NEUROSYPHILIS

Personal Observations and Opinions

WILLIAM NEWTON HUGHES, A.M., M.D.

This paper, without any claim for originality, presents briefly facts of value in the treatment of neurosyphilis.

*From the neurological department of the Rhode Island Hospital.

Read before the Rhode Island Society for Neurology and Psychiatry at Butler Hospital, Dec. 14, 1925.

Many cases of neurosyphilis will be prevented by observing the following rules.

1. Primary syphilis should be intensively treated without a single week's intermission during the first year.

2. Never should reliance be placed entirely upon arsphenamine or one of its products. Bismuth, mercury, or both intramuscularly, and possibly potassium iodide by mouth should be given.

3. An examination of the spinal fluid should always be done after the first course of arsphenamine, even with a negative blood Wassermann test, as it may indicate the need of a longer course to prevent a relapse during bismuth or mercury treatment.

4. The parents of congenital syphilitic patients, the wives, husbands, and children of all syphilitic patients should have a complete history and physical examination done to detect signs of syphilis, and to indicate the value of a blood Wassermann test, of a spinal fluid examination, and of specific treatment. The above relatives, especially those of neurosyphilitic parents, should have blood and spinal fluid examinations in spite of negative histories and physical examinations, unless specific treatment or lumbar puncture is contraindicated.

When the diagnosis of neurosyphilis has been proved or seems probable, a complete history with a complete physical and mental examination should be recorded. Any previous luetic treatment and reaction to it should be noted, as well as any information in regard to previous blood, spinal fluid, urine, eye, and blood pressure examinations.

In beginning treatment, it is generally advisable to give mercury in some form for two or three weeks before intravenous injections. It is my practice to give it by mouth combined with potassium iodide as follows:—

R.—

Pot. iod.	drams v
Hydrarg. iod. rub.	gr. ii
Syr. Sarsaparil. co ad	oz. iv
misce	

Sig:—One teaspoonful three times a day preferably before meals in milk or water.

The iodides seem much better tolerated before meals. In psychotic and other socially maladapted patients intravenous sulpharsphenamine is often given before a mercury course.

In patients above fifty years of age, the mildest treatment which will free them of symptoms is desired. If a daily routine of suitable individual hygiene and tonic medication is arranged, syphilitic treatment may not be necessary. Generally the iodide-mercury mixture by mouth, followed by short courses of bismuth intramuscularly, is sufficient. In difficult cases, mercury by inunctions or intramuscularly, sulpharsphenamine intramuscularly or subcutaneously, sulpharsphenamine or tryparsamide intravenously, and even intraspinal treatment may be selected. Short courses and the least intensive treatment which will produce satisfactory results are given.

Ordinarily, following mercury, sulpharsphenamine intravenously, intramuscularly, or subcutaneously is given in .3 to .6 gram doses once or twice a week, the number of injections depending upon the patient's reaction. Hoping to avoid making a socially adapted neurosyphilitic patient sick because of treatment, I give small doses and short courses of sulpharsphenamine to all except the psychotic and other socially maladapted patients. These receive much more intensive treatment, often from twenty to thirty injections without a week's intermission.

Sulpharsphenamine I believe to be the best arsphenamine product for neurosyphilitic patients, since it is less dangerous than tryparsamide, more effective in the average case, and next to tryparsamide in power of penetrating nervous tissues. It may be given intravenously in the same manner as neoarsphenamine. It, however, does not give a sore arm if part of it is injected into the superficial tissues near the vein, and it may be stirred into solution more vigorously and allowed to stand for a longer time without toxic deterioration. It may also be given subcutaneously or intramuscularly with essentially no pain, provided it is dissolved in one cubic centimeter or less of distilled water. I inject it in the gluteal muscles and in the tensor fasciae latae just below the femoral trochanter. If it is used subcutaneously, it may be injected between the scapulae with the least difficulty.

Following the sulpharsphenamine course, potassium bismuth tartrate is given once or twice weekly deep into the gluteal muscles; .1 gram for five doses; then .15 to .2 gram until a total of 2.5 to 3 grams has been reached. I agree with most

of the recent literature in considering bismuth of more value in neurosyphilis than mercury. After injections of bismuth or sulpharsphenamine, vigorous local massage for thirty or forty seconds seems to prevent the formation of indurated areas. Essentially no local pain occurs, if small doses precede the larger ones, but, if large doses are given at first, there may be much local pain and even generalized pains, suggesting a neurorecidive. Slight generalized weakness has been the only symptom noted as the limit of tolerance has been approached. A sense of well being occurs in most patients receiving bismuth, and this never seems to occur if mercury is used in place of bismuth.

Courses of mercury may be substituted for bismuth or alternated with it. I use inunctions if the patient will co-operate. One-half a mercuriette (Park Davis & Co.) is rubbed on a different area of the body every day of the week except one for twenty to thirty minutes, and then the surplus ointment is removed with benzine. I rarely use malodorous intramuscular mercury injections, as they do not seem as effective as bismuth and are more painful. Still, in an occasional case, they are of value.

Mercury or bismuth is not given in conjunction with intravenous treatment because of the increased frequency of arsphenamine reactions.

Because of its possible dangers, I have used tryparsamide only in psychotic or socially maladapted cases who did not improve under other syphilitic medication. It is given intravenously in twenty to thirty cubic centimeters of distilled water. If no reaction occurs, it may be continued once a week for many months, the initial dose of one gram being increased to two grams at the second injection and then to two and one-half to three grams at subsequent injections. Generally after a varying number of injections of tryparsamide, courses of bismuth, mercury, or sulpharsphenamine are given. Without doubt the majority of patients treated with tryparsamide improve mentally and physically, the mental improvement being the more marked.

Because of its inconveniences and dangers, I use some form of intraspinal, intracistern, or intraventricular treatment, only when other resources have failed. I consider this the most efficient treatment in obstinate cases of neurosyphilis.

Throughout all the different courses of syphilitic treatment, potassium iodide may be given, five to seventy-five drops of the saturated solution three times a day before meals in milk or water. It is omitted for two weeks in every month.

Reactions to potassium iodide, mercury, bismuth, sulpharsphenamine, and tryparsamide should be noted before each treatment, and pertinent symptoms and physical signs checked every one to three weeks. In all cases of neurosyphilis, the patient with the disease and not the disease alone must be treated. Individual treatment is the key to success.

I shall discuss reactions to arsphenamine products in the order of frequency in which I have found them.

1. Slight itching at the elbows, which generally begins in the arm used for injections and sometimes spreads to the other arm or even becomes generalized, indicates that the limit of arsphenamine tolerance has been closely approached. Patients with it receive an arsphenamine product cautiously after three or four weeks' intermission.

2. Nausea and vomiting, occurring for the first time after several injections, may indicate arsphenamine saturation so that it is well to proceed carefully or to omit arsphenamine for one or two weeks.

3. Diarrhea generally indicates more arsphenamine saturation than nausea and vomiting but arsphenamine can be used with care after one or two weeks.

4. Formication in the feet occurs especially with neoarsphenamine. The drug may be continued after two or three weeks' intermission.

5. A generalized rash which often follows local or generalized itching indicates that the danger point of arsenic tolerance has been approached. An arsphenamine product should not be used for three or four years.

6. Herpes simplex or herpes zoster may indicate too little or too much arsphenamine: in the former case being a neurolapse; in the latter an arsphenamine poisoning. If the herpes clears up rapidly, I wait for two or three weeks and then give arsphenamine again cautiously. If the herpes seems to progress, I tend to continue arsphenamine in small doses without an intermission.

7. Marked dermatitis with keratoses of palms and soles has the same meaning as a less marked generalized rash and should be treated in the same way as far as arsphenamine is concerned. It most often occurs when arsphenamine and mercury have been given in conjunction or in close succession. In one patient, it occurred when mercury inunctions were given several weeks after the cessation of intramuscular sulpharsphenamine. The fact that sulpharsphenamine is retained in the tissues longer than other arsphenamine products probably explains this case.

8. Hemorrhages from the mucous membrane of the mouth or nose are of grave import. With this condition it is probably advisable never to use arsphenamine again because of the danger of cerebral hemorrhage.

As soon as any of the arsphenamine reactions are well under control, bismuth may be used. Tryparsamide has been given without ill effect two or three months after a generalized rash or marked dermatitis. The only symptoms which I have noted after tryparsamide have been flashes of light in front of the eyes. These quickly disappeared so that further treatment could be resumed.

SUMMARY

Primary syphilis should be intensively treated without a single week's intermission during the first year.

Never should reliance be placed entirely upon arsphenamine or one of its products.

An examination of the spinal fluid should always be done after the first course of arsphenamine even with a negative blood Wassermann test.

Individual treatment is the key to success. Sulpharsphenamine and bismuth are recommended in the treatment of neurosyphilis.

With a generalized rash or marked dermatitis an arsphenamine product should not be used for three or four years.

With hemorrhage from mucous membranes, an arsphenamine product should probably never be used again.

Tryparsphenamide may be used without ill effect two or three months after an arsphenamine dermatitis.

REDUCTION OF MEDICAL TAXES

Representatives of Association Appear Before Ways and Means Committee

At a hearing before the Committee on Ways and Means of the House of Representatives held at Washington, October 21, a presentation of reasons was made for the reduction of the existing war tax on physicians under the Harrison Narcotic Law. The American Medical Association was represented at the hearing by Dr. Charles W. Richardson, Washington, D. C., member of the Board of Trustees, and by Dr. William C. Woodward, Chicago, executive secretary, Bureau of Legal Medicine and Legislation.

Dr. Richardson pointed out to the committee that prior to the war the federal tax or fee paid by physicians for a license under the Harrison Narcotic Law was one dollar. He said that the medical profession of the country gladly accepted the increased war tax of three dollars and that the profession did everything in its power to make the law effective. He said that, as many of the war taxes are being removed, this increased tax against physicians should now, in justice, be restored to the rate existing prior to the war.

Dr. Woodward stated that it is clearly a question of whether Congress will or will not reduce a war tax; that the present rate of three dollars was effected by the Revenue Act of 1918 along with other increases; that these other increases have, to a large extent, been removed or reduced.

"For a number of years," said Dr. Woodward, "the tax derived from physicians under the narcotic act was nearly a half million dollars greater than the expenses of enforcing the act. Obviously, that was as it should be if one were dealing with a measure intending to raise revenue. Recently, however, the plea was made that inasmuch as approximately half a million dollars a year was being collected under the law, therefore the appropriation should be increased so as to permit the use of the entire amount for enforcing the law. That argument was accepted and an increased appropriation of half a million dollars was made. So it is not fair to take the cost of enforcing the law and fix the tax on that basis."

(Continued on page 134)

THE RHODE ISLAND MEDICAL JOURNAL

Owned and Published by the Rhode Island Medical Society
Issued Monthly under the direction of the Publication Committee

FREDERICK N. BROWN, M.D., *Editor*
309 Olney Street, Providence, R. I.

CREIGHTON W. SKELTON, M.D., *Business Manager*
166 Broad Street, Providence, R. I.

ASA S. BRIGGS, M.D.
ALEX M. BURGESS, M.D.
W. LOUIS CHAPMAN, M.D.
JOHN E. DONLEY, M.D.
WILFRED PICKLES, M.D.
J. W. LEECH, M.D.
NORMAN M. MCLEOD, M.D.
ALBERT H. MILLER, M.D.
DENNETT L. RICHARDSON, M.D.
GUY W. WELLS, M.D.
C. S. WESTCOTT, M.D.

*Associate
Editors* *Committee on Publication*

FREDERICK N. BROWN, M.D., *Chairman*
CREIGHTON W. SKELTON, M.D.
J. A. YOUNG, M.D.
HALSEY DE WOLF, M.D.
J. W. LEECH, M.D.

Advertising matter must be received by the 10th of the month preceding date of issue.

Advertising rates furnished upon application, to the business manager, CREIGHTON W. SKELTON, M.D., 184 Broad Street, Providence, R. I.

Reprints will be furnished at the following prices, providing a request for same is made at time proof is returned: 100, 4 pages without covers, \$6.00; each additional 100, \$1.00. 100, 8 pages, without covers, \$7.50; each additional 100, \$2.80; 100, with covers, \$12.00; each additional 100, \$4.80. 100, 16 pages, without covers, \$10.50; each additional 100, \$3.00; 100, with covers, \$16.00, each additional 100, \$5.50.

SUBSCRIPTION PRICE, \$2.00 PER ANNUM. SINGLE COPIES, 25 CENTS.

Entered at Providence, R. I. Post Office as Second-class Matter.

RHODE ISLAND MEDICAL SOCIETY

Meets the first Thursday in September, December, March and June

H. G. PARTRIDGE	<i>President</i>	Providence
NORMAN M. MACLEOD	<i>1st Vice-President</i>	Newport
ARTHUR H. HARRINGTON	<i>2nd " "</i>	Howard
JAMES W. LEECH	<i>Secretary</i>	Providence
J. E. MOWRY	<i>Treasurer</i>	Providence

DISTRICT SOCIETIES

KENT

Meets the second Thursday in each month

G. HOUSTON	<i>President</i>	Arctic
C. S. CHRISTIE	<i>Secretary</i>	Riverpoint

NEWPORT

Meets the third Thursday in each month

WILLIAM S. SHERMAN	<i>President</i>	Newport
ALEXANDER C. SANFORD	<i>Secretary</i>	Newport

Section on Medicine—4th Tuesday in each month, Dr. Charles A. McDonald, Chairman; Dr. C. W. Skelton, Secretary and Treasurer.

R. I. Ophthalmological and Otological Society—2d Thursday—October, December, February, April and Annual at call of President Dr. Jeffrey J. Walsh, President; Dr. Francis P. Sargent Secretary-Treasurer.

The R. I. Medico-Legal Society—Last Thursday—January, April, June and October. Dr. Creighton W. Skelton President; Dr. Jacob S. Kelley, Secretary-Treasurer.

PAWTUCKET
Meets the third Thursday in each month excepting
July and August

STEPHEN A. KENNEY	<i>President</i>	Central Falls
LESTER J. GILROY	<i>Secretary</i>	Pawtucket

PROVIDENCE

Meets the first Monday in each month excepting
July, August and September

ROLAND HAMMOND	<i>President</i>	Providence
P. P. CHASE	<i>Secretary</i>	Providence

WASHINGTON

Meets the second Thursday in January, April,
July and October

M. H. SCANLON	<i>President</i>	Westerly
WM. A. HILLARD	<i>Secretary</i>	Westerly

WOONSOCKET

Meets the second Thursday in each month excepting
July and August

EDWARD L. MYERS	<i>President</i>	Woonsocket
WILLIAM A. KING	<i>Secretary</i>	Woonsocket

EDITORIALS

INTOLERANCE

It might reasonably have been expected that the continued increase in opportunities for liberal education would have resulted in the dissemination of that spirit of tolerance so necessary to progress, but it is unfortunately true that the reverse is the case. A veritable wave of intolerance seems to be sweeping the country. Restrictive legislation of a

century ago is being revived, and the lawmakers of the present are striving to outdo their ancestors in meddling in the personal affairs of their constituents. The most notable and pernicious example of this interference with freedom is the increasingly successful attempt to prevent the teaching of the theory of evolution in the schools of many of our states. This movement is a deliberate effort to limit the spread of knowledge concerning subjects which prove themselves displeasing to a certain bigoted and vociferous portion of the community. Its chief danger lies in the fact that it may prove

the entering wedge in a control of education which would lead to stifling all independent thought and scientific research. Inasmuch as our practice is dependent for its progress on the advance of such thought and research, we must unite with all other educated men in strenuously opposing, at every opportunity, any attempt to limit the absolute freedom of education.

language, and to enlist his aid by making the administration of the remedy financially profitable to him. It is indeed fortunate that the good sense and moral integrity of the medical profession foredoom this attempt to the failure which it merits.

1. Koch's "Cancer Antitoxin"—*Jour. Am. Med. Assoc.*, lxxxvi, 19, 1469-1472.
2. Bulletin of the Koch Cancer Foundation, i, 1, 2, and 3.

EXPLOITING THE CANCER SUFFERER

The steadily increasing number of institutions and organizations formed for the study and attempted control of cancer, as well as the less spectacular but equally praiseworthy work of thousands of independent investigators in all parts of the world, bears eloquent testimony to the interest displayed in the problem of malignant disease by the medical profession. That this interest is by no means confined to medical men is evidenced by the generous moral and financial support accorded to these investigations by the general public. It is, indeed, doubtful if any other medical problem has ever attracted a like amount of attention.

There is, however, a certain class of men who are anxious and willing to utilize the suffering of others as a means of exploitation, and to these gentry the cancer field has afforded an opportunity with golden possibilities. "Cures" almost without number have arisen, have held out vast encouragement and glowing promise, have taken large sums of money from patients who could ill afford such expense, and have left behind disillusionment and a new realization that for advanced cancer, there is, at present, no known remedy.

The Koch Cancer Foundation is the imposing name assumed by a group of men interested in promoting the sale of the latest of these supposed "cures" for this dread disease. The merits of this Synthetic Antitoxin for the Cure of Cancer have been carefully investigated on at least two occasions and there is not the slightest evidence that this secret remedy possesses any curative properties. The remedy is being advertised with an ingenuity which might well find a better outlet, the attempt being made to delude the general practitioner by a clever mixture of half truths and falsehoods clothed in pseudo-scientific

MEDICAL EDUCATION

A constantly recurring question that is vexing the minds of most of the practitioners of medicine is the attitude of the layman to medical practice. In all walks of life there is a noticeable lack of faith in the medical profession in the minor ailments, as evidenced by the increasing work of the osteopaths, chiropractors and the like.

An answer to this question, and a very reasonable one, is made by the Chairman of the Section of Pharmacology and Therapeutics at the last annual session of the American Medical Association. Dr. Thomas Ordway, who is also Dean of the Albany Medical College, states that there are "two serious defects in our medical education and medical practice which have been potent factors in the development of the so-called cults—the neglect of the proper instruction and use of physical therapy and the consideration and general application of psychiatry."

One other factor has been the unsympathetic treatment accorded to the chronic invalid. This unfortunate individual wanders from one office to another, either to be told that there is nothing the matter or that this new prescription will bring about relief. It may be true that physically the individual is sound, but the dislocation of a person's relation to his family or the community is of greater moment and more lasting significance than the dislocation of an actual joint.

There is distinct hope for the future, for the American Medical Association has formed a council on physical therapy which will undoubtedly suggest the proper treating of this subject in our medical schools. Also the interest that has been taken by many practitioners in the subject of mental hygiene has evolutionized the teaching of this

subject so that now the general principles are being taught in terms intelligible to the average mind. Furthermore the chronic invalid is being given more consideration, special hospitals being established to study the problems of chronic illness. With these new acquisitions, the physician of the future should be able to compete more successfully with the cults and incidentally give better service to their patients.

AS TO IODINE

The treatment of goitre with iodine compounds is one of the oldest, well established forms of therapeutics that is known. The ancient Greeks, without knowledge of the beneficial agent, used the ashes of sea weed which contained a large amount of iodine. Since its first use in the form of ashes, iodine has passed through alternating cycles of praise and condemnation in the treatment of goitre. About two years ago, iodine came into favor again after a careful study of its effects on thyroid disease by competent workers. Recently, however, repeated warnings have appeared about the harmful effects of the drug when used improperly and the question of its disuse is again raised.

In the past, little was known about the thyroid gland. Until comparatively recently, iodine was not known to be in the gland in considerable quantity. Varying results were not attributed to different pathological conditions in the gland. Physicians have had a good excuse for not using a drug in a purely empirical manner. At the present time, however, such knowledge is available and thyroid diseases are classified. Certain conditions of the gland are improved to a moderate extent; others do not improve; and some are likely to be made worse with the use of iodine. It would seem better if the physician acquainted himself with such information rather than to condemn a drug which has a definite but limited place in the treatment of thyroid diseases.

SOCIETIES

PROVIDENCE MEDICAL ASSOCIATION

The regular monthly meeting of the Providence Medical Association was called to order by President Roland T. Hammond, Monday evening, April 5, 1926, at 8:50 P. M. In the absence of the secretary, Dr. Peter P. Chase, Dr. Hammond called

for nominations for a secretary pro tem. Dr. Wilfred Pickles was nominated and elected to this position. The records of the previous meeting were read and approved. The Standing Committee having approved the application for membership of Dr. Edward T. Strecker, the Association voted to instruct the secretary to cast one ballot for the election of the applicant, and this was done. There was no unfinished or new business. Dr. Hammond reported to the Association the death of one of its oldest members, Dr. George L. Collins, and appointed the following members as a committee to draw up resolutions: Dr. John W. Keefe, Dr. Halsey DeWolf and Dr. Elihu S. Wing.

Dr. Ray W. Benton read the first paper of the evening on "An Unusual Case of Tuberculous Meningitis." He pointed out that this condition ordinarily presents a definite clinical picture, and diagnosis in a hospital is usually not difficult. In the case presented, an eight year old child was struck on the head with a stone two weeks prior to admission to the City Hospital, and during this period the child had three convulsions. The Von Pirquet and intradermal tuberculin tests were negative, in spite of the fact that clinically the case began to resemble tuberculous meningitis; and tubercle bacilli could not be demonstrated in the spinal fluid until twelve days after admission. Autopsy findings and guinea pig inoculation confirmed this diagnosis.

Dr. Eric Stone then presented "Comments on Epididymitis," based on a study of 160 cases of this condition, and arrived at the following conclusions: (1) expectant treatment alone is not efficient; (2) epididymotomy gives immediate relief of pain and shortens the time of hospitalization; (3) mercurochrome stands next to epididymotomy in relief of pain but does not shorten the time in the hospital; (4) sodium chloride is of no benefit; (5) in a few cases aolan seems to shorten the course of the disease; (6) in selected diathermy aids in avoiding incapacitation. The paper was discussed by Drs. Oddo, MacAlpine and Stone.

"The Treatment of Scoliosis" was the subject of the final paper, presented by Dr. Henry McCusker. Dr. McCusker outlined the various modes of treatment which have been used for the correction of the structural type of this deformity. He showed that Drs. Lavett and Brewster, after consultation with engineers, had decided that a spine

with scoliosis should be regarded as an arch; and that the effort should be, therefore, to separate the ends of the arch rather than to bring pressure on the keystone which is the strongest part. They devised a plaster jacket which would accomplish this object, but this made a very bulky apparatus, and Dr. McClusker achieves the same result by means of a fairly light leather jacket. The paper was illustrated by many typical X-rays and by a patient wearing one of the corrective jackets. The paper was discussed by Drs. Danforth, Horan and McCusker.

The meeting adjourned at 10:25 P. M.

Attendance 57.

Collation was served.

Respectfully submitted

WILFRED PICKLES

Secretary Pro-Tem.

The regular monthly meeting of the Providence Medical Association was called to order by the President, Dr. Roland P. Hammond, Monday evening, May 3, 1926 at 9:00 P. M.

The records of the last meeting were read and approved.

Dr. William P. Buffum moved that the secretary of the Milk Commission of the Providence Medical Association be empowered to sign contracts with the producers of certified milk in the name of the Providence Medical Association.

It was voted to refer this to the Standing Committee.

Dr. Montafix Houghton presented a specimen of an ascending Intussusception of the Ileum. This started about two and one half inches ($2\frac{1}{2}$) from the ileocecal valve but went up the ileum from here. He removed about 18 inches of gut.

Dr. Jerome J. McCaffrey presented a case of Spinal Cord Tumor. This was a young girl who last fall began to have a muscular weakness of one arm extending to leg and then up other side of body. There was incontinence of urine and constipation. Sensory disturbances localized a tumor in the fifth, sixth and seventh cervical vertebrae and X-Ray showed a lateral destruction of bone here. Dr. Kingman removed a neuro-blastoma at operation. He discussed the types of tumors and signs.

Dr. Charles A. McDonald spoke of difficulty of distinguishing cervical cord tumors from those of lower cord. A thorough neurological examination is usually sufficient. Dr. Robert C. Robinson discussed the scoliosis the child previously had, apparently not related to the tumor.

Dr. James A. McCann read a paper on "A Study of Obscure Kidney Pain in Women." These were cases from one to three months service. He emphasized the necessity of careful, thorough work. In cases not pointing particularly to kidney

trouble a series of beautiful X-Ray studies showed hydronephrosis.

Dr. Kerney and Dr. White discussed the paper.

The third paper was by Dr. Ira H. Noyes and Dr. Anthony Corvese on the "Significance of Blood Sedimentation Time in Gynecology and Obstetrics." The test consists in timing the sedimentation of corpuscles in citrated blood. In a healthy adult it varies from two to four hours. In uterine pregnancy the time diminishes as the pregnancy advances. It is decreased in inflammations. Over sixty minutes is against the presence of pus and under thirty-five points to active pus formation. The sedimentation test alone is not reliable to determine the time for operating in inflammatory conditions. It is of sufficient value to warrant its use in Gynecology in cases where a leucocyte count might be desired.

The paper was discussed by Drs. Corvese and Brackett.

The meeting adjourned at 10:45 P. M.

Attendance 75.

Collation was served.

Respectfully submitted

PETER PINEO CHASE

Secretary

The regular monthly meeting of the Providence Medical Association was called to order by the President, Dr. Roland Hammond, Monday evening, June 7, 1926 at 8:45 o'clock.

The records of the last meeting were read and approved.

The Standing Committee having approved their applications the following were elected members of the Association: Philip Batchelder, Perry Bernstein, Domenico Calise, Edward F. Dougherty, Jr., Paul J. Ewerhardt, Americo J. Pederella, Joseph Smith, Valentine Ujhely, John N. Walsh, Herman A. Winkler.

The secretary reported that the Standing Committee had empowered the Medical Milk Commission to sign contracts with the producers of certified milk.

Dr. John W. Keefe read an obituary notice of Dr. George L. Collins. It was voted that this be spread on records, a copy sent to the sisters of Dr. Collins, and a copy printed in the Rhode Island Medical Journal.

Dr. Brown asked that members give their papers to the secretary for printing in Medical Journal.

Dr. Edward G. Melvin reported a case of Phlegmon of the Upper Lip in a girl of 20. She had a furuncle of back of neck and pustules first at base of left side of nose and then of right with great swelling of upper lip and face. She refused operation at first but on fourth day with temperature of 106 she was thoroughly opened, then had X-Ray treatment. After a long course with pus in arm and a cough she completely recovered. Staph.

Aureus was organism. Dr. John B. Ferguson discussed the case.

Dr. I. Gerber spoke of ten cases he had seen treated by X-Ray. Dr. Mowry and Dr. Melvin also discussed it.

Dr. George W. Waterman read a paper on "Functional Uterine Hemorrhage." This occurs during the reproductive period, is marked by no characteristic physical findings and its etiology is considered by different men concerned with the endometrium, uterine walls, ovaries or endocrine and sympathetic systems. He believes that it is due to ovarian endocrine disturbances lighted up by various factors. Treatment is directed to general physical condition, organotherapy, D. & C., and finally radium treatment is very brilliant.

Discussion by Dr. Edward S. Brackett. He emphasized that these cases are not primarily pelvic.

The paper was also discussed by Drs. J. A. McCann, I. H. Noyes, C. A. McDonald, A. Corvese and Dr. Waterman.

Dr. Harvey B. Sanborn read a paper on "Vomiting and Pain in Neurological Conditions." Pain may originate from disease in the viscus, disease in the nervous system or be psychic. Vomiting may be caused by trouble in the viscus, toxic state of the nervous system or psychic trouble. He cited three common conditions causing mistakes and reported cases of gastric crises, epidemic encephalitis and hysteria.

Paper was discussed by Drs. C. O. Cooke, and C. A. McDonald.

The meeting adjourned at 11 P. M.

Attendance 83.

Collation was served.

Respectfully submitted

PETER PINEO CHASE
Secretary

PAWTUCKET MEDICAL ASSOCIATION

Regular meeting of Pawtucket Medical Association held at the "Jack-o-Lantern," 33 Summer St., Pawtucket, on June 15, 1926, at 8:45 P. M.

Speaker of the evening was Frederick V. Hussey, M.D., of Providence.

Subject: "Surgical Conditions in Children."

After a general discussion, the meeting was adjourned and a collation was served.

LESTER J. GILROY, M.D.
Secretary

WOONSOCKET MEDICAL SOCIETY

The officers of the Woonsocket District Medical Society of the ensuing year as elected at our last meeting are as follows:

President, Edward L. Myers.

First Vice-President, A. Constantineau.

Second Vice-President, Thomas J. McLaughlin.

Secretary, William A. King.

Treasurer, L. V. Conlon.

Counsellor, James H. McCooey.

Delegate, N. S. Garrison.

Censors, C. B. Barry, A. H. Monty, Thomas S. Flynn.

WILLIAM A. KING, M.D.
Secretary

REDUCTION OF MEDICAL TAXES

(Continued from page 129)

Representative W. R. Green, chairman of the committee, made the significant remark, "I suppose you are inclined to think that in any event the burden of enforcing the law ought to be on the whole public and not on the medical profession." The remark of Chairman Green may be regarded as the crux of this proposed tax reduction. The enforcement of the law is clearly an expense which should be borne by the public generally and not by the medical profession alone. Under no conditions can it be claimed that the enforcement of a general federal statute should be paid for exclusively by any class or any profession.

Drs. Richardson and Woodward also presented two proposed amendments to the existing federal income tax law: first, authority to deduct expenses incurred in attending meetings of scientific and professional organizations; and second, expenses of postgraduate study.

Dr. Richardson stated that, in the revenue acts of 1921 and 1924, exemptions are permitted to all trades, industries and mercantile organizations that send their representatives to various parts of the country. Dr. Woodward argued that the medical profession should be entitled to the same privilege, which has been denied to physicians under rulings of the Commissioner of Internal Revenue. The extent to which physicians are members of medical organizations and attend their meetings was shown by Dr. Woodward. He stated that inquiries were addressed to ninety-eight medical organizations, and seventy-seven of these reported their membership. The total membership of these seventy-seven medical organizations was 177,219. He stated that the estimated cost of attendance was \$17,718,000. On a 4 per cent basis the tax amounted to \$68,726, which is a very conservative estimate of the federal taxes paid by the medical profession under this particular section of the law because of the adverse rulings of the Commissioner of Internal Revenue.

The Committee on Ways and Means will continue to hold hearings for a considerable time, and will then go into executive session for the purpose of drafting the new federal tax bill to be considered at the December session of Congress.—*Jour. A. M. A.*, Oct. 31, 1925.